

## Kissinger, Lon

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**From:** Shephard, Burt  
**Sent:** Wednesday, September 16, 2015 6:11 PM  
**To:** Frank Gobas  
**Cc:** Kissinger, Lon  
**Subject:** Follow up on contaminant bioconcentration by returning salmon

Frank,

Since Lon Kissinger and I talked with you and Chris Kennedy several weeks ago about our adult salmon bioconcentration project, we have made some progress that we would like to share with you.

The most encouraging news is that our EPA HQ Office of Water has provided Region 10 with funding that, among other things, should be able to provide some financial support in conducting the bioconcentration modeling. I'm not a contract officer who can work through details, but support is available.

We now have a substantial amount of information regarding spawning migration times from the mouth of the Columbia River to several spawning locations for both chinook salmon and steelhead. This information includes a range of lower, average and upper bound estimates for migration times. We also have calculated average swimming speeds during the spawning runs, which appear to be well below the critical swimming speeds for the species. Combined, we should be able to generate good estimates of exposure time ranges to contaminants of the returning adults.

Lon is still working on the contaminants to be evaluated. Generally, he's looking for chemicals that are not as lipophilic as PCBs but are not completely water soluble. I suggested that chemicals with log Kow values between 3 and 4 may be good candidates. In particular, I suggested that endosulfan, one of the last chlorinated pesticides in use, is a good candidate chemical. One or more of the benzene hexachloride insecticides such as lindane could also be a possibility. There does appear to be at least a limited amount of fish tissue and water column data for these chemicals that could serve as a starting point for food web model calibration. We are still looking for additional empirical water and fish tissue concentrations for chemicals of interest. I suspect it won't be difficult to identify log Kow values for chemicals of interest once we've identified a list of chemicals to model.

Lon and I would appreciate the opportunity to have a follow up discussion with you regarding contaminant bioconcentration in salmonids during their spawning runs and human health risks posed to individuals consuming these salmon. This work will be of importance in determining whether or not salmon should be included in the fish consumption rate used to set ambient water quality criteria for the state of Idaho. EPA comments on Idaho's rule are due on November 6th. Given this deadline we hope we can talk with you at your earliest convenience.

There is another possibility for further discussions. I'm going to be presenting at the Canadian Ecotoxicology Workshop in Saskatoon early next month (assuming our Congress doesn't shut down the US government on October 1st, in which case I'm legally unable to travel on government business). If you or some of your students that may be interested in this are also going to be in Saskatoon, we could have some discussions there.

We appreciate your willingness to discuss this with us, and look forward to talking with you soon.

Best regards,

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"Facts are stubborn things, but statistics are more pliable"  
- Mark Twain